

CLAIMS

WHAT IS CLAIMED IS:

1. A reinforced structural member for reinforcing portions of an automotive vehicle, comprising:
 - 5 (a) an elongated carrier member formed of a polymeric material, the carrier member including;
 - i) a first body member having a first end;
 - ii) a second body member having a first end wherein the first end of the second body member is attached to the first end of the first body member such that the second body member is disposed at an angle relative to the first body member; and
 - 10 iii) at least one connector member interconnecting the first body member to the second body member;
 - 15 (b) a reinforcement material disposed upon a portion of the carrier member, the portion of the carrier member being selected from the first body member, the second body member and the at least one connector member.
2. A member as in claim 1 wherein the first body member is attached to the second body member with an arcuate portion and the reinforcement material is at least partially disposed upon the arcuate portion.
- 20 3. A member as in claim 1 wherein the at least one connector member bridges a space between the first body member and the second body member.
- 25 4. A member as in claim 1 wherein the at least one connector member is contoured to form an arc or an angle.
- 30 5. A member as in claim 4 wherein the arc or angle of the at least one connector member is directed outwardly from the carrier member.

6. A member as in claim 1 wherein the at least one connector member is configured as a truncated triangle.

7. A member as in claim 1 wherein the carrier member is formed of
5 a singular material.

8. A member as in claim 1 wherein a length of the carrier member extends from a first panel of an automotive vehicle toward a second panel of an automotive vehicle.

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9. A member as in claim 8 wherein at least a portion of the expandable reinforcement material is configured to expand and adhere to the first panel and a portion of the expandable reinforcement material is configured to expand and adhere to the second panel.

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10. A member as in claim 3 wherein at least a portion of the expandable reinforcement material is located in the space.

11. A member as in claim 9 wherein the first panel is a body side
20 inner panel and the second panel is a body side outer panel.

12. A member as in claim 1 wherein the first body member is configured to collapse on the second body member in an accordion-like manner.

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13. A reinforced structural member for reinforcing portions of an automotive vehicle, comprising:

(a) an elongated carrier member formed of a polymeric material, the carrier member including;

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- i) a plurality of first body members;
- ii) a plurality of second body members, each of the plurality of second body members attached to one or more of the first body members and disposed at an angle relative to

the one or more first body members for forming a zig-zag configuration;

- iv) pairs of opposing connector members interconnecting and bridging a space between each one of the plurality of first body members and at least one of the plurality of second body members; and

(b) a reinforcement material disposed upon a portion of the carrier member, the portion of the carrier member being selected from the plurality of first body members, the plurality of second body members and the pairs of connector members wherein:

- i) the reinforcement material is an expandable material; and

- ii) upon experiencing an impact, the plurality of first body members are configured to move toward the plurality of second body members thereby fracturing the pairs of connector members.

14. A member as in claim 13 wherein each connector member of the pairs of connector members is contoured to form an arc or angle.

15. The member as in claim 13 wherein the zig-zag configuration extends along a length of the carrier member.

16. A member as in claim 15 wherein a length of the carrier member extends from a first panel of an automotive vehicle toward a second panel of an automotive vehicle.

17. A member as in claim 16 wherein at least a portion of the expandable reinforcement material is configured to expand and adhere to the first panel and a portion of the expandable reinforcement material is configured to expand and adhere to the second panel.

18. A member as in claim 17 wherein at least a portion of the expandable reinforcement material is located in the space.

19. A member as in claim 18 wherein the first panel is a body side inner panel and the second panel is a body side outer panel.

20. A member as in claim 19 wherein the first body members and the second body members are configured to collapse on each other in an accordion-like manner.

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21. A reinforced structural member for reinforcing portions of an automotive vehicle, comprising:

(b) an elongated carrier member formed of a polymeric material, the carrier member including;

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- i) a first body member having a first end and a second end, the first body member being shape as a rectangular wall;
 - ii) a pair of second body members, each of the pair of second body members having a first end wherein the first end of the first body member is attached to the first end on one of the pair of second body members and the second end of the pair of second body members is attached to the first end of the other of the pair of second body members;
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 - iii) each of the pair of second body members is disposed at an angle at an angle relative to the first body member to form a zig-zag configuration;
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 - iv) a first connector member interconnects a first side of the first body member to a side of one of the pair of second body members and a second connector member interconnects a second side of the first body member to a side of another of the pair of second body members; and
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 - v) the first connector member is contoured to form an arc or angle; and

(b) a reinforcement material disposed upon a portion of the carrier member such that the reinforcement material is located between the first body member and at least one of the pair of second body members, the reinforcement material being a heat activated expandable material.

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22. The member as in claim 1 wherein the zig-zag configuration extends along a length of the carrier member.

23. A member as in claim 22 wherein the length of the carrier member extends from a first panel of an automotive vehicle toward a second panel of an automotive vehicle.

24. A member as in claim 23 wherein at least a portion of the expandable reinforcement material is configured to expand and adhere to the first panel and a portion of the expandable reinforcement material is configured to expand and adhere to the second panel.

25. A member as in claim 24 wherein the first panel is a body side inner panel and the second panel is a body side outer panel.

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26. A member as in claim 25 wherein the first body members and the second body members are configured to collapse on the first body member in an accordion-like manner.

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